

Subject Code: 1ET2030105	Subject Title: ADVANCED SOFTWARE ENGINEERING (Elective – I)
Pre-requisite	Fundamentals of Object Oriented Analysis & Design and Software Engineering

Course Objective:

Complexity in management of software projects has increased drastically in recent times. The objective of the course is to address the issue. The course also aims to provide systematic and organized mythology to manage the software development process. Further, an additional objective of the course is to make the students aware regarding the various techniques, approach, and technical documentation applied during the software development life cycle.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
2	-	2	4	60	40	30	20	150

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
01	Introduction software Engineering: Motivation, Software Process, Generic process model, Product & Process, Review of Software Process Models	2	8
02	Requirement Engineering& Modeling: What is requirement engineering? Requirement Engineering Tasks, requirement analysis.	4	17
03	Quality Management: What is quality?, Software quality, software quality dilemma, achieving software quality	4	17
04	Software quality assurance: Background issues, Elements of software quality assurance, SQA task-goals-metrics, Formal approach to SQA.	3	13
05	Managing software projects: Software Management spectrum, People-process-product-project, W5HH principle, Project metrics, Software measurement.	4	16
06	Software Maintenance & Reengineering: Software maintenance, Reengineering, Reverse engineering, Restructuring Forward engineering	3	13
07	Software process improvement: What is SPI?, SPI process, The CMMI, people CMM, CMMI framework, levels of CMMI, CMMI vs CMM. Study about CASE tool and other 5 tools related to Software Engineering	4	16

Review Presentation: The student is expected to spend minimum 2 hours per week (as mentioned in the teaching and evaluation scheme) to refer at least two peer reviewed journal papers related to this domain/subject. The student is expected to identify issues/challenges and emerging trends in the domain/subject. Student is supposed to explore various video lectures (E.g. NPTEL) available in the domain/subject. Student is required to make a review-presentation on the work carried out for the same.

Recommended sites for journal papers are (1) dl.acm.org (2) springer.com (3) sciencedirect.com (4) elsevier.com (5) ieeexplore.ieee.org (6) scholar.google.co.in (7) scopus.com or others of similar repute.

Course Outcome:

After successful completion of the course, student will be able to:

- Acquaint with systematic and organized approach for developing the software.
- Learn an individual as well as teamwork approach for project development.
- Develop necessary skills for designing a software system using modern tools. Understand various software quality assurance models.

List of References:

1. Software Engineering: A practical Approach, Roger S. Pressman, McGraw-Hill
2. Software Project Management, Sanjay Mohapatra, Cengage Learning
3. Software Project Management in Practice, PankajJalote, Pearson
4. Software Engineering, Eighth Edition, Sommerville, Pearson
5. Software Engineering, Rajiv Mall, PHI

E-Resources / Web Links:

- <http://www.rspa.com/index.html>
- <http://nptel.ac.in/courses/106101061/5>
- <http://nptel.ac.in/courses/106105087/>

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

1. Study of stages of life SDLC for software development.
2. Define a project definition for you and carry out following experimentations for your project definition.
2. Prepare the SRS for your project definition.
3. Draw the USECASE diagram and Class diagram for your chosen system.
4. Draw the Data flow diagram and behavior model for your chosen system.
5. Analyze the risk related to the project and prepare RMMM plan.
6. Calculate effort using FP oriented estimation model.
7. Prepare Version control and change control for software configuration items.
8. Prepare SQA Activities for your project.
9. Prepare GANTT chart and PERT for your project.